

etc., would be the source of an intermittent supply of toxin to the system; and though the lytic action of an already existing immunity render the absorbed streptococcal product more effective for the kidney where in greater part the toxin is eliminated.

A comparative study of the experimentally induced scarlatinal nephritis in the dog with the filtered *in vivo* prepared toxin shows a complete analogy with the afebrile post-scarlatinal nephritis of man.

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Serological Evidence of Identity of Duval and Hibbard Measles Coccus with that Isolated by Tunnicliff.

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In a recent paper Tunnicliff¹ has noted the close immunological relationship between the cocci isolated by her from patients with measles and those isolated by other workers, as evidenced by the phagocytic index. In the study she used 2 strains isolated in this laboratory by Duval and Hibbard² from the blood stream of human cases of measles during the height of the eruption; the blood in each case was filtered through a Berkefeld N filter before special media was inoculated, a coccus being obtained from every case cultured.

Similar evidence of this immunological relationship has likewise been demonstrated in this laboratory, based upon agglutination reactions. Three rabbits were immunized by 12 intravenous injections over a period of 70 days—one with a coccus sent us by Tunnicliff, another with a measles coccus isolated by Duval and Hibbard, and a third with a stock strain of *Streptococcus viridans*. The first 4 injections were killed cultures, the last 8 were living cultures.

As shown by the accompanying tables, the sera of the rabbits immunized against the measles cocci each agglutinated almost equally and to high dilutions both strains of the measles coccus, while the *Streptococcus viridans* was only slightly agglutinated by these sera. On the other hand, the serum of the rabbit immunized against the *Streptococcus viridans* very markedly agglutinated the homologous organism, whereas the measles cocci were practically not affected.

¹ Tunnicliff, Ruth, *J. Infect. Dis.*, 1927, xli, 267.

² Duval, C. W., and Hibbard, R. J., *Proc. Soc. Exp. Biol. and Med.*, 1927, xxiv, 519.

An unexpected result of these agglutination reactions is the fact that the sera of the measles rabbits agglutinated the *Streptococcus viridans* much more markedly than the serum of the rabbit immunized against *Streptococcus viridans* agglutinated the measles cocci. We have not yet been able to account for this experimentally, but we conjecture that it is because rabbits carry streptococci immunologically related to the viridans, but none related to the measles coccus.

TABLE I.
Agglutination with serum of rabbit immunized against Streptococcus viridans.

	1/40	1/80	1/160	1/320	1/640	1/1280	1/2560	1/5120	Control
Strep. vir. Tunncliff coccus	+++	+++	+++	+++	+++	+++	+++	+++	—
Duval & Hibbard coccus	—	—	—	—	—	—	—	—	—
	+	—	—	—	—	—	—	—	—

TABLE II.
Agglutination with serum of rabbit immunized against Tunncliff measles coccus.

	1/40	1/80	1/160	1/320	1/640	1/1280	1/2560	1/5120	Control
Strep. vir. Tunncliff coccus	+++	+++	++	+	?	—	—	—	—
Duval & Hibbard coccus	+++	+++	+++	+++	+++	+++	+	?	—
	+++	+++	+++	+++	+++	+++	++	?	—

TABLE III.
Agglutination with serum of rabbit immunized against Duval and Hibbard measles coccus.

	1/40	1/80	1/160	1/320	1/640	1/1280	1/2560	1/5120	Control
Strep. vir. Tunncliff coccus	++	+	?	—	—	—	—	—	—
Duval & Hibbard coccus	+++	+++	+++	+++	+++	+++	+	?	—
	+++	+++	+++	+++	+++	+++	++	+	—